

WHAT IS CLAIMED IS:

1. A method of detecting DNA markers in a sample, comprising
providing a cell-free bone marrow sample from a subject; and
detecting one or more DNA markers in the sample.
2. The method of claim 1, wherein the DNA markers are in the 1p, 3p, 6p,
6q, 8p, 10q, 11q, 14q, 16q, or 17p region.
3. The method of claim 1, wherein the DNA markers are indicative of
LOH, DNA hypermethylation, or DNA mutation.
4. The method of claim 1, wherein the DNA markers include D1S228,
D8S321, D4S175, D4S1586, D5S299, D8S133, D8S261, D8S262, D8S264, D9S171,
D10S197, D10S591, D10S532, D14S51, D14S62, D15S127, D16S421, D16S422,
D17S796, D17S849, D17S855, D18S58, D18S61, or D18S70.
5. The method of claim 1, wherein the DNA markers are indicative of
hypermethylation in RASSF1A, MGMT, GSTP1, RAR- β , TWIST, APC, DAPK, P16,
or Cyclin D2 promoter.
6. The method of claim 1, wherein the DNA markers are indicative of
mutation in KRAS or BRAF gene.
7. A method of detecting cancer, comprising
providing a cell-free bone marrow sample from a subject; and
detecting one or more DNA markers in the sample, wherein LOH,
hypermethylation, or mutation of the markers is indicative of cancer in the subject.
8. The method of claim 7, wherein the cancer is melanoma, neuroblastoma,
colorectal, breast, or prostate cancer.

9. A method of staging cancer, comprising
providing a cell-free bone marrow sample from a subject suffering from cancer;
and

5 detecting one or more DNA markers in the sample, wherein LOH,
hypermethylation, or mutation of the markers is indicative of an advanced stage of the
cancer in the subject.

10 10. The method of claim 9, wherein the cancer is melanoma, neuroblastoma,
colorectal, breast, or prostate cancer.

11. A method of prognosing cancer, comprising
providing a cell-free bone marrow sample from a subject suffering from cancer;
and

15 detecting one or more DNA markers in the sample, wherein LOH,
hypermethylation, or mutation of the markers is indicative of a poor prognosis of the
cancer in the subject.

20 12. The method of claim 11, wherein the cancer is melanoma,
neuroblastoma, colorectal, breast, or prostate cancer.

13. A method of detecting LOH and DNA hypermethylation, comprising
providing a sample from a subject; and
detecting a combination of LOH and DNA hypermethylation in the sample.

25 14. The method of claim 13, wherein the sample is a serum, plasma or tissue
sample.

15. The method of claim 13, wherein the LOH is indicated by one or more
DNA markers that include D1S228, D8S321, D4S175, D4S1586, D5S299, D8S133,
30 D8S261, D8S262, D8S264, D9S171, D10S197, D10S591, D10S532, D14S51,
D14S62, D15S127, D16S421, D16S422, D17S796, D17S849, D17S855, D18S58,
D18S61, or D18S70.

16. The method of claim 13, wherein the DNA hypermethylation is detected in RASSF1A, MGMT, GSTP1, RAR- β , TWIST, APC, DAPK, P16, KRAS, BRAF, or Cyclin D2 promoter.

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17. A method of detecting cancer, comprising
providing a sample from a subject; and
detecting one or more DNA markers in the sample, wherein a combination of LOH and hypermethylation of the markers is indicative of cancer in the subject.

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18. The method of claim 17, wherein the cancer is melanoma, neuroblastoma, colorectal, breast, or prostate cancer.

19. The method of claim 17, wherein the sample is a serum, plasma or tissue sample.

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20. A method of staging cancer, comprising
providing a sample from a subject suffering from cancer; and
detecting one or more DNA markers in the sample, wherein a combination of LOH and hypermethylation of the markers is indicative of an advanced stage of the cancer in the subject.

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21. The method of claim 20, wherein the cancer is melanoma, neuroblastoma, colorectal, breast, or prostate cancer.

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22. The method of claim 20, wherein the sample is a serum, plasma or tissue sample.

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23. A method of prognosing cancer, comprising
providing a sample from a subject suffering from cancer; and

detecting one or more DNA markers in the sample, wherein a combination of LOH and hypermethylation of the markers is indicative of a poor prognosis of the cancer in the subject.

5 24. The method of claim 23, wherein the cancer is melanoma, neuroblastoma, colorectal, breast, or prostate cancer.

 25. The method of claim 23, wherein the sample is a serum, plasma or tissue sample.

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 26. A packaged product, comprising
 a container;
 one or more agents for detecting one or more DNA markers in a sample; and
 an insert associated with the container and indicating that the sample is a cell-
15 free bone marrow sample.

 27. A packaged product, comprising
 a container;
 one or more agents for detecting one or more DNA markers in a cell-free bone
20 marrow sample from a subject; and
 an insert associated with the container and indicating that LOH, hypermethylation, or mutation of the markers is indicative of cancer in the subject.

 28. A packaged product, comprising
25 a container;
 one or more agents for detecting one or more DNA markers in a cell-free bone marrow sample from a subject suffering from cancer; and
 an insert associated with the container and indicating that LOH, hypermethylation, or mutation of the markers is indicative of an advanced stage of the
30 cancer or a poor prognosis of the cancer in the subject.

29. A kit, comprising one or more agents for detecting a combination of LOH and DNA hypermethylation of one or more DNA markers in a sample. /

5 30. A packaged product, comprising /
a container;
one or more agents for detecting one or more DNA markers in a sample from a subject; and
an insert associated with the container and indicating that a combination of LOH and hypermethylation of the markers is indicative of cancer in the subject.

10 31. A packaged product, comprising /
a container;
one or more agents for detecting one or more DNA markers in a sample from a subject suffering from cancer; and
15 an insert associated with the container and indicating that a combination of LOH and hypermethylation of the markers is indicative of an advanced stage of the cancer or a poor prognosis of the cancer in the subject.